

Patent claims

1. An electronic power module, in particular for an electronic motor controller for soft-starting motors, having
  - a first and a second cooling device (7 to 12) and
  - a semiconductor device (1) which is arranged between the first and the second cooling device (7 to 12),characterized in that
  - an elastic annular element (6) is arranged around the semiconductor device (1), with the space within the annular element (6) being encapsulated and being partially bounded by the first and second cooling devices (7 to 12), and the semiconductor device (1) being located in said space.
2. The electronic power module as claimed in claim 1, with the first and second cooling devices (7 to 12) each having at least one heat sink (9 to 12).
3. The electronic power module as claimed in claim 1 or 2, with the first and/or second cooling devices or device (7 to 12) each having a metal rail (7, 8) for directly transporting heat away from the semiconductor device (1) and for making electrical contact with the semiconductor device (1).
4. The electronic power module as claimed in claim 3, with the respective metal rail (7, 8) and the at least one heat sink (9 to 12) being integral.
5. The electronic power module as claimed in claim 3 or 4, with the respective metal rail (7, 8) and the at least one heat sink (9 to 12) being composed of copper and/or aluminum.

6. The electronic power module as claimed in one of the preceding claims, with the semiconductor device (1) having two semiconductor elements (TH1 to TH4) electrically connected back-to-back in parallel.

7. The electronic power module as claimed in claim 6, with the semiconductor elements (TH1 to TH4) being in the form of semiconductor cells (2) without a housing.

8. The electronic power module as claimed in one of the preceding claims, with the annular element (6) being composed of rubber.

9. The electronic power module as claimed in one of the preceding claims, with the annular element (6) being of a size which is substantially constant in the axial direction, so that a prespecified air gap and creepage distance are ensured between the first and second cooling devices (7 to 12).

10. The electronic power module as claimed in one of the preceding claims, with the annular element (6) having an opening or cutout (17) through which lines (3, 5) for triggering a thyristor are passed and/or through which an encapsulation compound (16) is introduced.

11. A method for producing an electronic power module, in particular for an electronic motor controller for soft-starting motors, by

- arranging a semiconductor device (1) between a first and a second cooling device (7 to 12),

characterized by

- arranging an elastic annular element (6) around the semiconductor device (1), with a space being produced within the annular element (6), which space is partially bounded by the first and second cooling devices (7 to 12)

and in which the semiconductor device (1) is located, and  
- encapsulating the space with an encapsulation compound  
(16).

12. The method as claimed in claim 11, with the annular  
element (6), before encapsulation, creating a space between the  
two cooling devices (7 to 12) in such a way that a prespecified  
air gap or creepage distance is ensured between the first and  
the second cooling device (7 to 12).